GRUMMAN plane news

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Elect Towl President of Grumman Corp., Board Chairman of Aerospace; Zarkowsky, Gavin, Bierwirth get top posts

At a special meeting of the Grumman Corporation Board of Directors on Monday, July 17, Clint Towl was elected President and John C. Bierwirth was elected Vice President-Finance. Towl is also Board Chairman of Grumman Corporation.

The following Friday, July 21, at a special Aerospace Board meeting, Towl was elected Chairman of the Board of Grumman Aerospace Corporation, the largest subsidiary of Grumman Corporation, Bill Zarkowsky was elected Vice Chairman, and Joe Gavin, President. Bierwirth was also elected a Director of Grumman Aerospace.

Lew Evans had been President of Grumman Corporation and Chairman of the Board of Grumman Aerospace until his death on July 9.

Clint Towl

Bill Zarkowsky

For Towl, it meant resuming a more active daily role in the affairs of the Company he has been associated with for more than 42 years. In December 1929, Clint Towl and five others founded Grumman. After serving in many capacities in the early days of the Company, he was named Assistant Treasurer in 1937. Towl was elected Administrative Vice President in 1954, then, in six-year intervals, President in July 1960, and Chairman of the Board and Chief Executive Officer in May 1966.

During his tenure as President and Chairman of the Board of Grumman Aircraft Engineering Corporation (later Grumman Corporation), the Company made strong strides to become one of the leading and most successful aerospace firms in the U.S. In 1963, he had also initiated the consolidation of all non-aerospace activities at Grumman under a single corporate entity, Grumman Allied Industries, Inc.

Corporate spin-off

In July 1969, when Grumman Aircraft Engineering Corporation was restructured and renamed Grumman Corporation, Towl was elected Chairman of the Board and Chief Executive Officer of the parent corporation and its chief subsidiary, Grumman Aerospace Corporation. Upon the formation of Grumman Data Systems (January 1970) and Grumman Ecosystems (January 1971), Towl was also elected Chairman of the Board of those subsidiaries. He gave up his Board Chairman post in Grumman Aerospace in February 1971 and was succeeded by Lew Evans.

Bill Zarkowsky, who is now Vice Chairman of the Board and former President of Grumman Aerospace, began his career here as a $14 a week summer shop worker while still an engineering student at New York University. That was during the depresssion year of 1937.

Broad experience

After graduation in 1939, he worked first in the shop and on the flight line, and then in Engineering, where he held positions in structural design, systems, aerodynamics, and stress. During most of this time he concentrated on power plant installation and propulsion design, his work covering a broad range of technical and experimental aircraft effort, and design and production engineering.

Zarkowsky became associate to the chief engineer in 1956, and in 1957 he was chosen to be a Sloan Fellow—the first in the Company. After his return to Grumman with a Master's in Industrial Management, he was appointed program manager of the W-2F (now E-2). From 1962 to 1964 he was director of Program Management for military aircraft and unmanned space programs.

In May of '64, Zarkowsky was elected a Vice President, with special responsibility for the E-2, and later he was made director of all aircraft programs. In May 1969 he was elected a Director of Grumman Aerospace, in February 1970, a Senior Vice President, and in February 1971, President of Grumman Aerospace. He also serves as a Director of Grumman Corporation.

Joe Gavin, who had been a Senior

(Continued on page 2)

Joe Gavin

Jack Bierwirth

Ecosystems begins NASA tests, survey of Amazon area for Peru

Bill Schwendler Jr., Executive Vice President of Grumman Ecosystems Corporation, a Grumman Corporation subsidiary, has just announced three developments far removed from one another geographically and technically.

The first is a half-million dollar contract with Petroleos de Peru, a Peruvian government agency, for the exploration of very promising oil and gas possibilities, and the second is a $270,000 contract with the National Aeronautics and Space Administration to map the water quality in the Virgin Islands and compare it with measurements obtained by aircraft and NASA's new Earth Resources Technology Satellite (ERTS-I). The characteristics of the water currents, and physical, chemical, and biological characteristics in the three harbors of St. Thomas are of ecological concern to NASA, the Virgin Islands government, and the Environmental Protection Agency. Bill Coulbourn is in charge of this Virgin Islands experiment for Ecosystems.

Survey of the upper reaches of the Amazon Basin in Peru has begun: clearing of the first three of 10 navigational systems bases in the jungle—no small job—is nearly completed. Side-looking airborne radar (SLAR) and a four-lens camera are mounted in Ecosystems' A-26C airplane, and magnetometer equipment in the specially equipped Gulfstream I. The combined aerial readings will produce new mapping information and the possible location of oil and gas resources. Five commercial oil companies—Amoco, ARCO, British Petroleum, Getty, and Phillips—are financing the survey, Schwendler said. Petroleos de Peru is helping with licensing and tax matters.

Among the Ecosystems personnel working in Peru will be Red Hafter, in charge of the project there; Mike Tenzyk, Gulfstream I pilot and second in command; Swede Fagernes, responsible for the marketing and assisting in licenses and government relations; Bob Pate, electronics systems expert. Off-Shore Navigation, Inc., of New Orleans,

(Continued on page 4)

Gavin new Aerospace President; Bierwirth gets top corporate post

(Continued from page 1)

Vice President in charge of all Space Programs before his election to the presidency of Grumman Aerospace, graduated from M.I.T. with a B.S. and M.S. in aeronautical engineering. He served in the Navy from 1942-46 and following service joined Grumman as a design engineer on the XF9F-2, Grumman's first jet fighter.

Chief space engineer

In 1948, Gavin moved to Preliminary Design, and two years later was appointed project engineer on the F9F-6. He had a similar assignment on the F11F. In 1956, he became chief experimental project engineer, and a year later was named chief missile and space engineer.

Gavin was elected Vice President in 1962 when he was made director of the Lunar Excursion Module Program (later Lunar Module). In October 1968 he was named director of Space Programs, in May of 1969, with the incorporation of Grumman Aerospace, he was elected a Director of the new subsidiary, and in February of 1970 he was elected Senior Vice President.

Financial specialist

Jack Bierwirth, who was elected Vice President-Finance of Grumman Corporation and a Director of Grumman Aerospace Corporation, has been a Director of Grumman Corporation since 1971.

During World War II, Bierwirth served as a lieutenant aboard a destroyer-escort, returned to Yale University and received a B.A. in history in 1947, then went on to Columbia Law School to earn an LL. B. in 1950.

Following graduation he joined the law firm of White and Case as an associate lawyer, three years later became an assistant vice president of New York Trust Company (now Chemical Bank), and, in 1957, became associated with National Distillers and Chemical Corporation as assistant treasurer.

A year later Bierwirth was elected a vice president of National Distillers. In 1963, when the corporation formed its international division, he was appointed general manager of the new venture. Bierwirth was elected a director of National Distillers in 1966 and an executive vice president in 1969.

Jack Bierwirth first became associated with Grumman Corporation in February 1971 when he became a member of the Board of Directors.

In discussing Bierwirth's job with Grumman Corporation, Clint Towl outlined the following areas of responsibility: commercial banking relations; investment banking relations; insurance; capital expense and profitability budgets; mergers and acquisitions; long term planning; Treasurer/Controller departments of the parent corporation and all subsidiary companies, including tax and internal auditing departments; liaison work with non-aerospace subsidiaries.

On wheels. **And away we go. Wells Darling (L), Grumman Allied Motorhomes Program manager, with his wife, Mary Will, son Bill, 13, and daughter Molly, 15, are experts in getting the most out of a Motorhome vacation. Goes everywhere, comfortably and in style.**

First Modular Building to be weather station

Grumman Allied Industries new 100,000-square-foot plant in Montgomery, Pa., is now in operation for production of Grumman Modular Buildings and Grumman Motorhomes. The first contract announced for Modular Buildings is for a weather station.

"We're scheduled to deliver this three-unit prototype of a national Weather Services center to Fort Totten, Queens, in early September, and if it works out as well as we anticipate, there could be a whole series of such remote stations for the U.S. Department of Commerce," said Bob Loar, Executive Vice President of Grumman Allied.

Grumman Modular Buildings have been developed for quick and economical assembly. Each module can be as large as 50x8x24 feet, custom finished inside and out, fitted with carpeting and kitchen and bathroom fixtures, all ready to be assembled and plugged in to electric and sewerage outlets at the site.

The Fort Totten weather station will consist of three units: a single module for office operations, and a double-decker with floor and ceiling removed to make an uninterrupted inside height of 19½ feet, to accommodate the weather balloons. In contrast to concrete block structures built in the past, this one is bright and lively, with gold oak for the siding. The high doors are painted orange, the roof white. Inside colors are sky blue, with gray floor and ginger-color carpeting in the operations area. Grumman has collaborated with the National Weather Service's architect to develop a modern and functional station.

Bob Farren is general manager of Modular Buildings for Grumman Allied, and Bill Hunt has been named Modular Buildings production manager. Bob Somerville is the plant manager in Montgomery. Don Shelley is production manager for Motorhomes.

The plant is divided right down the middle to provide for the Modular Buildings on one side and Motorhome production on the other. Loar sees a promising future in the adaptability of these two distinctive lines to modern styles of living and working.

Wells Darling, Grumman Allied Motorhomes Program manager, says the Motorhome market is a big one "and by January of 1973 we hope to be producing two to four units a day in Grumman Allied's new plant." The customer has a choice of chassis: Chevrolet, International Harvester, or Dodge. Two new models, a 21-foot, and a 28-foot, are joining the Motorhome 25-footers, the longest one being aimed at the retiree market. "It's luxurious — really comfortable," Darling says.

Rental fleets

A somewhat unexpected development has livened the Motorhome sales picture with a number of big dealers becoming active in establishing Motorhome rental fleets. "They're booked solid to mid-September," Darling reports. Most of these dealers charge from $275 to $350 a week rental, plus a 10-13 cent mileage charge. Then they sell the marked-down homes at the end of the first or second rental season."

Loar sees a promising market in the 21-foot Motorhome to be introduced to the public in October, "but the 28-footer will get its big send-off the first week in December at the Louisville Recreational Vehicle Institute show."

Construction on Grumman Allied's new Montgomery plant was delayed somewhat by the recent heavy floods in Pennsylvania, when the plumbers, electricians, and other key construction workers were called off the job to assist in rehabilitation work. "It made us feel very neighborly," Somerville reported. "We ourselves were not seriously held back by the flooding around us."

Are you bi-lingual?

Can you read or speak a foreign language fluently—fluently enough to be a translator? If you can, Grumman International would like to know. From time to time, G.I.I. has documents that need to be translated to support overseas efforts; your help would be appreciated.

If you do have this ability, please send the following information to Bob Sylvia, Grumman International, Plant 41:

Your name, department, plant, telephone extension, the language, and the degree of fluency: read? write? conversational? technical?

Discount tickets

Employee Services Office is offering discount prices for the Ice Capades at Nassau Coliseum. The dates are August 26, 27, 29, 30, and 31, and September 2 and 3. $7 tickets are $5.50 (children $3.50), $6 tickets $5.50 (children $3), $5 tickets are $3.50 (children $2.50).

'Thank you' means a lot

The following letter was received from Mrs. Charm Miller, whose husband Bill died in the crash of No. 10 F-14 on June 30. She asked that we print it as an open letter to all at Grumman.

July 18, 1972

On behalf of the family and myself I would like to voice our deep appreciation for your expressions of thoughtfulness and concern. Many of you have reached out in a very personal way during these past days. "Thank you" must mean a great deal. It is expressed most sincerely.

Grumman gave Bill the opportunity to do what he loved best, to be involved in aircraft designing and flying. That is a source of tremendous gratitude and comfort now.

He took great pride in being part of the Company and what Grumman is trying to provide for our country. Bill strove to give both his best. That is a goal worthy for each of us to work toward.

Thank you again for all that has been done.

Sincerely,

Charm Miller

Navy hits 'controversial rhetoric' as it rebuts F-14 story

Many newspapers quoted, or carried in part, an AP (Associated Press) story that "43 major flaws" and "75 minor problems" were uncovered during the F-14's first NPE (Navy Preliminary Evaluation). This has brought on a point-by-point explanation by the Navy.

This rather unusual step was taken by the Navy to set the record straight. As it says, "Unfortunately, the public rarely hears the positive side of the F-14 program, its requirement, an objective analysis of test and evaluation performance, or meaningful cost discussion, but is showered with controversial rhetoric."

The Navy "position" paper deals with the AP's contentions concerning:

- F-14 major and minor dificiencies
- The crash of aircraft No. 10
- Reports of engine stalls, spin recovery, and flight range
- F-14 weapon systems
- Program cost

As for the "flaws" and "problems"—including 16 safety-related deficiencies—the Navy pointed out that it had expected these because of the very nature of testing a new aircraft: that is, ". . . the objective of an NPE is to finalize early in the program areas that require correction prior to Board of Inspection and Survey (BIS) trials and fleet employment. The AP release fails to mention several other areas. . . . First, not only were deficiencies covered, but enhancing design characteristics as well, totalling 34 in number that the Naval Air Test Center team recommended for incorporation in future aircraft designs."

Test results

In addition, the Navy said that the released testimony "included Navy Proposed Corrective Action for each and every deficiency. . . . (As for items) requiring mandatory correction," the Navy said that "a vast majority" had been completed by the time the second NPE got under way.

The Navy also remarked pointedly that new, state-of-the-art concepts "accounted for 14 major and four minor deficiencies." As an example, though, of the drive for ever-better approaches, "14 of the total discrepancies . . . are connected with the escape system which has essentially the same capabilities of the current F-4. . . ."

After the mention of "flaws" and "minor problems," the news agency had a paragraph about the crash of Tomcat No. 10. "The impression is certainly left with the reader," the Navy commented, "that the loss of F-14 No. 10 is somehow related to the NPE results." Such was not the case, though, for "F-14s were maintained in a flight status, attesting to the fact that the probability of mechanical failure was remote." An accident board is looking into the circumstances of the crash, which took Test Pilot Bill Miller's life.

On the question of engine stall, which "was perhaps the major NPE I problem," said the Navy, the difficulty "has been corrected and modified engines installed for the (current) NPE II evaluation. Difficulty in spin recovery and flight range were not NPE I deficiencies (as suggested by the wire service) and are not considered major problem areas."

Examines 'cost growth'

That gets us to the weapon system and the report that ". . . Congressmen were told that 10 deficiencies were found in the system. . . ." The Navy says that was the case one year ago but, since then, eight have been corrected. "Changes to the remaining two have been held pending evaluation of the system installed in the F-14. The AWG-9 reflects a quantum jump in fighter weapon systems and capability. As in the F-14 report, the AWG-9 NPE report projects seven items that enhance mission accomplishment. . . ."

The article then said that the F-14 is "under fire from Congressional critics because of its escalating costs." The Navy views the problem in another way: "The $11.6 million program unit cost reflected in mid-1971 was under a total aircraft buy of 722 aircraft. Subsequently, to remain within the bounds of the present contract and fiscal guidance, the total aircraft program was restructured to 313 aircraft, resulting in a program unit cost of $16.8 million. **This was not a program cost growth** (emphasis added), but the arithmetic result of a lesser procurement although research and development costs remain constant."

And the Navy statement said:

"There has been relatively little cost growth to the Government providing the integrity of the existing contract is maintained."

Cite F-14 performance

The Navy statement also suggested that "the public has been led to believe the F-14 is a grossly mis-managed program developing an aircraft capable of nothing. This is the result of at times misinformation, but a majority of the time to incomplete, misinterpreted information."

In summary, read the Navy statement, "The F-14 is meeting and in some cases exceeding performance specifications in over 1,100 flight test hours. The F-14 will provide a fighter weapons system capable of successfully countering the increasingly sophisticated threat."

That bore out testimony by Adm. Elmo Zumwalt, Chief of Naval Operations, before a hearing of the subcommittee on Tactical Air Power, Senate Committee of the Armed Services, earlier this year:

"Overall, the six test pilots, and three other Navy pilots who have flown the airplane, are unanimously impressed by the airplane's performance."

Ground performance. To keep Tomcats healthy for the rigorous flight testing required in its air superiority fighter role, a lot of people on the ground have to make certain that the aircraft's tuned up to do the job—the job you see (in part) here. (Photo by Fred Annette)

What an act to follow . . .

It's been a notable year for Cdr. Les Berglund, commanding officer of Attack Squadron 128, whose men are the "Golden Intruders," the A-6 training squadron of NAS Whidbey Island. During the 15 months Commander Berglund has had the helm, VA-128 has racked up nearly 15,000 accident-free A-6 and TC-4C hours flown, and to A-6 Fleet squadrons has delivered 75 trained pilots, 47 B/Ns, and more than 1,000 maintenance personnel. Training included completion of over 1,200 carrier qualification landings aboard five carriers, and nine visual weapons deployments to NAS Fallon and MCAS Yuma.

Although VA-128 is considered to be "shore duty," frequent and prolonged absences from home are no novelty for the Golden Intruders. However, morale is high; Commander Berglund has been gratified by the reenlistment of almost 60 percent of first term and well over 90 percent of career men during his tour.

Commander Berglund moved to the Naval War College in July and Cdr. Bob Miles, who has been the executive officer, has taken command of VA-128.

Intruders on target

Messages from Navy squadrons can make the day brighter. Here's one from ATKRON 145 at Whidbey Island Naval Air Station:

"It is my exquisite pleasure to announce that the Swordsmen of ATKRON 145 flying the venerable A-6A Intruder won the derby and demonstrated once again that when it comes to all-weather attack, leave the driving to us."

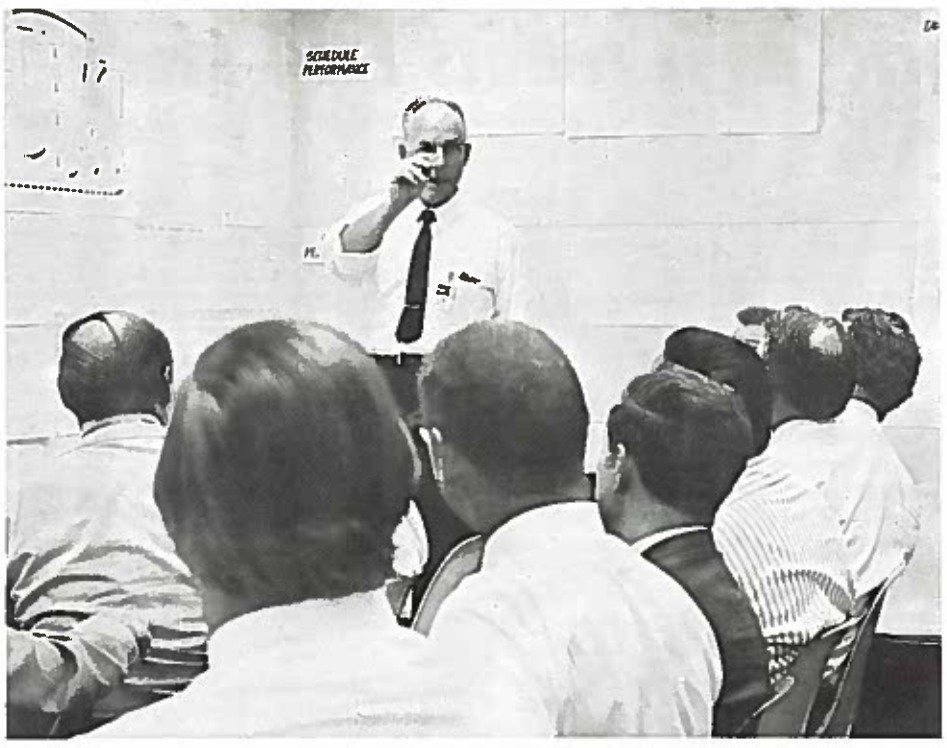
This was a light attack competitive exercise involving A-7E and A-6E aircraft. Minimum altitude 1500 feet, aircraft unlit, unmarked target. Each squadron required to compete (enter) 50 percent of crews on board.

Bob McNeill is Grumman's base manager at Whidbey. Nothing dull there, obviously.

Shuttle news

As Plane News went to press on Wednesday afternoon, NASA announced that North American Rockwell had won the space shuttle contract. A Newsboard bulletin was delivered to all plants on Thursday morning, July 27, with information on the NASA decision.

Plane News will carry a more detailed story on the award in its next issue on August 25.



NASA visit. **Senior Vice President Corky Meyer, director of Product Operations, describes to NASA representatives who recently visited Bethpage and Calverton how Grumman's Plant 4 Action Center is equipped to handle production of QUESTOL (Quiet Short-Takeoff and Landing) experimental research aircraft. NASA will contract for two; Grumman/Boeing would like to build them. (Photo by Bob Settles)**

Last of a very special breed — LM completes vacuum tests

KENNEDY SPACE CENTER—The last of the Lunar Modules is now well down the pike.

Just a few days ago, July 20, exactly three years from the historic first LM landing on the moon, the LM 12 vehicle went through its last vacuum chamber test, which simulates the space environment. And with all of these last-time-around events, there's an ineffable piquancy. The admixture of pride in accomplishment and sadness — as though losing a close friend — makes for an odd climate. Yet, all that lies in the background of the mind: it has to, for every Grummanite at Cape Kennedy is absorbed in making LM 12 the best one ever. They know that historically, in the vernacular of the stage, all the other LMs are a tough act to follow.

They know, too, that "meticulous attention to detail" has paid off, handsomely; and there's no better route. So that's what's being done. The immediate, major tasks that lie ahead include five items:

- Final installation of the Lunar Roving Vehicle, to begin on August 7. It's scheduled for completion on the 11th.
- Installation and final check-out of the LM landing gear.
- The mating of the LM with the SLA (Spacecraft LM Adapter). This is set for August 17. (The job, in simple terms, is to put a two-section cover over the LM, half over the descent stage, then the upper half over the ascent stage.)
- On the 23rd, the Command Service Module and the LM will be stacked at the Vertical Assembly Building.
- Then, on the 28th, Apollo 17 will be carried by the Transporter to Launch Pad 39A.

Wiley Williams, director of LM operations at KSC, said that "over the last four years the Grumman team had established an unprecedented record of successful chamber runs."

The astronaut crew thanked the Grumman team for a job well done and expressed their confidence that the team will continue to perform professionally. Dick McLaughlin, manager of Assembly and Test Operation, commented that "All test results, including chamber runs, show our high level of performance on the LM will continue through the final Apollo mission."

Chuck Kroupa, Grumman KSC director, expressed the tremendous confidence he has in "the greatest spacecraft team ever assembled."

As usual, there's something new about each succeeding LM, and this time it's the inclusion of a geologist, Dr. Harrison Schmitt, who will serve as LM pilot. Gene Cernan is the mission commander and Ron Evans will be the CSM pilot.

With this mission, America is to land its 11th and 12th men on the moon in a continuing effort to explore that planet and the universe in which we live—a task that already has yielded rich benefits. And this is, in the long term, probably only the modest beginning.

Head KSC Club

George Quinn has been elected president of the Grumman Aerospace Club for 1972-73 term at the Kennedy Space Center, and is joined on the management club's directorate by Dan Strauss, vice president; Chuck Nelson, secretary-treasurer; and Lou Aguinaga, Joe Morales, Joyce Bailey, Joe Ram, and Jim Schmid, directors.

Ecosystems forms subsidiary to construct sewage systems

(Continued from page 1)

has about 10 people on the job and 13 are on the Ecosystems work force.

Another, very different development has taken place with the formation of Puritech Industries, Inc., as a subsidiary of Grumman Ecosystems Corp. Bill Schwendler Jr. has been elected Chairman of the Board and President of Puritech. He announced that this new Ecosystems subsidiary has begun construction of a waste treatment facility for a new Long Island housing development: Kaufman & Broad's condominium project called Waverly Park in Holtsville. Puritech also plans to build a similar rental facility being developed in Hauppauge by the Campagna Company of Manhattan. These two jobs provide Puritech with nearly half a million dollars' of business in Suffolk County.

General contractor

As a builder of waste and sewage treatment systems, Puritech will act as a general contractor and construction project manager for commercial, industrial, and municipal installations. It has already won these two installation contracts on Long Island and is pursuing several others.

Besides Bill Schwendler Jr., Joe Missbach serves as Director of Contracts, Larry Pierce as Secretary, and Ray Montano as Treasurer. Cliff Jessberger is in charge of operations and is assisted in project supervision and technical matters by Klaus Feindler.

Puritech uses local consulting engineers and subcontractors, with the Grumman Puritech personnel providing management direction and construction supervision throughout the contract. The two projects that Puritech is supervising in Suffolk County came about as the result of county Department of Environmental Control regulations, which require installation of sewage treatment facilities in large housing or commercial developments.

The Waverly Park development in Holtsville is a 287-unit condominium, an $8 million project being built by Kaufman & Broad, Inc., national home building firm. The sewage treatment facility Puritech is constructing was designed by the consulting firm of Nelson & Pope of Melville, L. I. It will be enclosed in a low profile building that blends with the architecture of the surrounding condominium units. The process equipment consists of two steel extended aeration treatment units that can purify 70,000 gallons of sewage a day. This goes into an underground leaching system, where it is further purified by natural processes. Start-up of the plant will occur in early September.

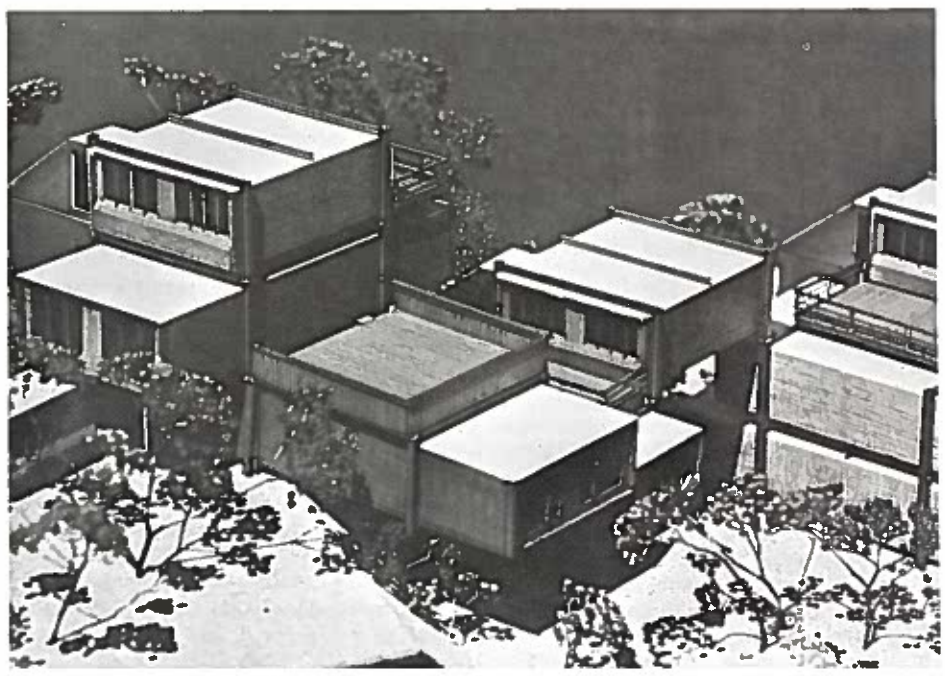
The Campagna Company will have a similar but larger waste treatment facility: 100,000 gallons capacity daily. Puritech Industries has just received a turnkey contract from Campagna which means that Puritech will have responsibility for the design as well as construction. The consulting firm of John A. Jacobsen Associates of East Islip will be in charge of the design for Puritech.

GAA Move

If you're wondering what happened to the GAA office in Plant 28B, try looking Plant 30 way. Bob Benn and his GAA staff have been situated on the first floor, southwest corner of Plant 30 since Tuesday, July 25. The phone extensions are the same: 2133 and 2269.

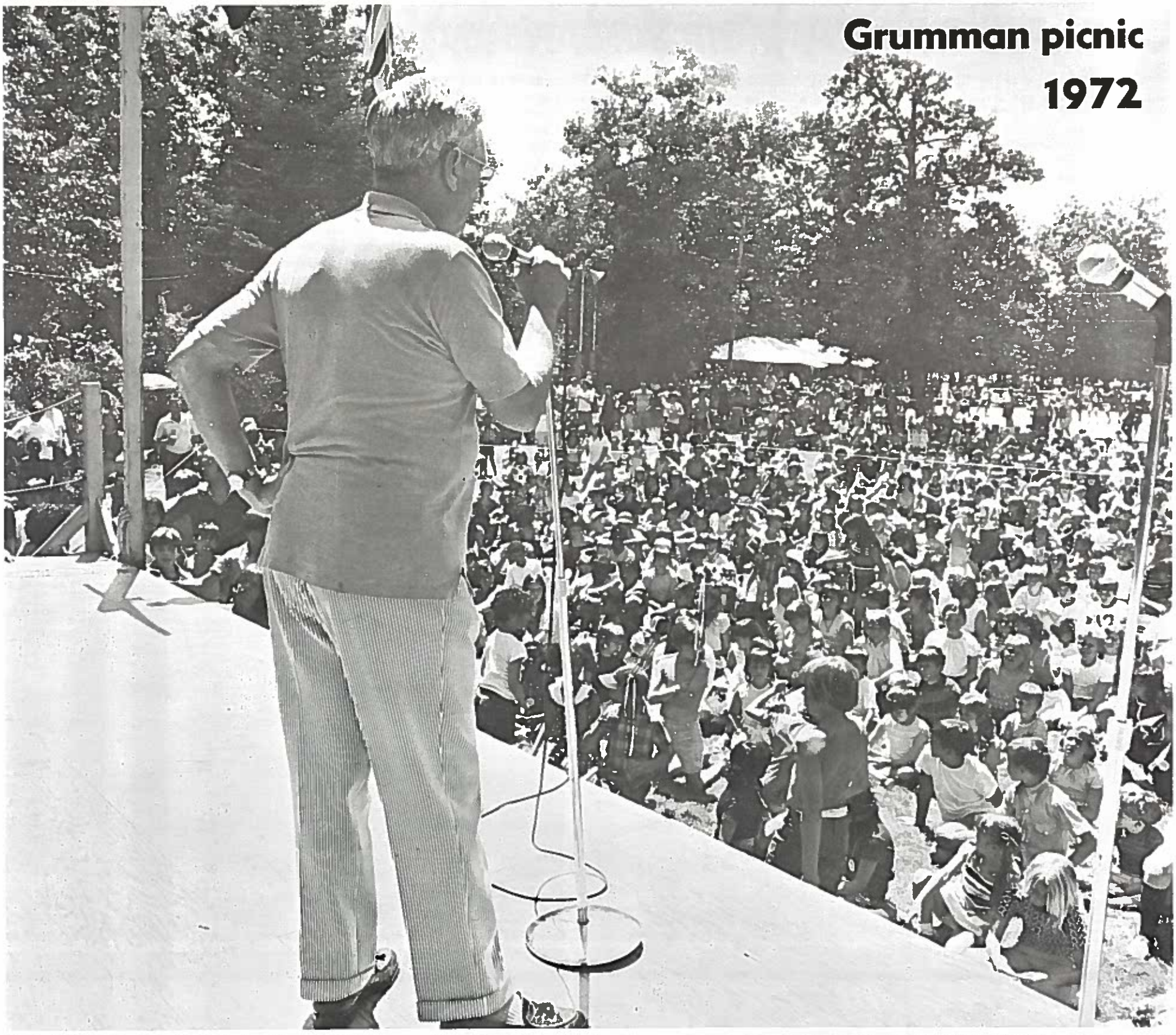
About the ads

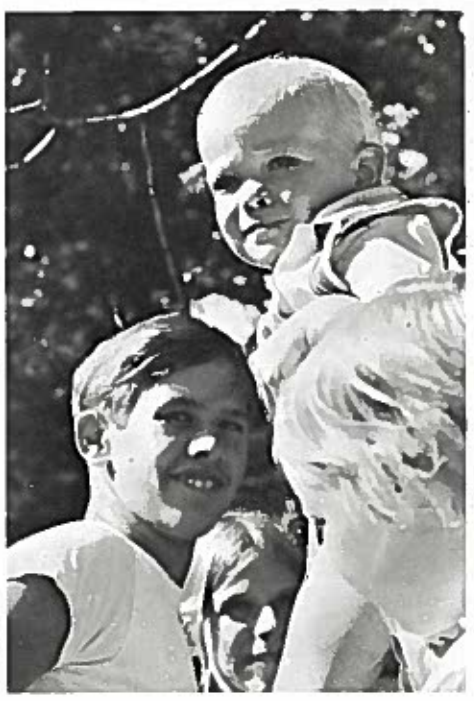
Hold! After this issue, no Plane News will be published until August 25. You can imagine the confusion with the classifieds. So if you have submitted an ad and it hasn't appeared by now, July 31, it will not appear at all unless you resubmit it August 7 or later. Left-over ads, July 31-August 7, will be discarded.

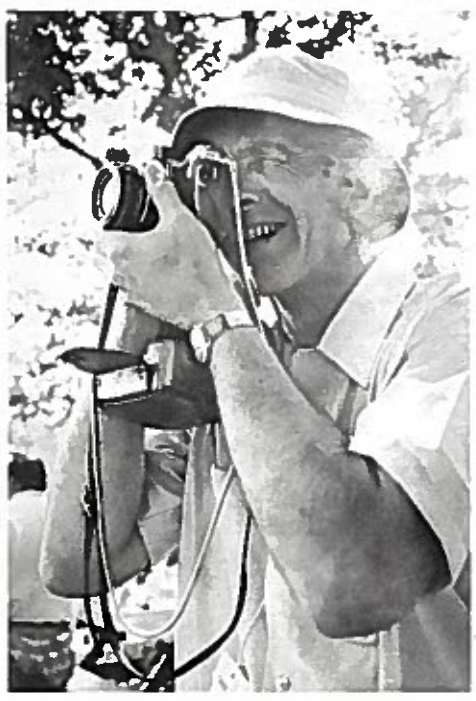


Versatile units. **A new 100,000 square foot plant has been opened by Grumman Allied Industries in Montgomery, Pa., for production of Grumman Modular Buildings (above) and Grumman Motorhomes. First contract announced for Modular Buildings is three-unit weather station for Fort Totten.**

Grumman picnic
1972







Sunny skies, tasty picnic fare, rides, games all add up . . .

When you gather about 7,000 adults and 23,000 kids in one treed area, what have you got? A picnic, that's what. And according to those who've been at these summer extravaganzas, this picnic at Calverton ranks as the best.

It really was a picture day, warm, sunny, with an occasional breeze that saved many an over-zealous slightly over-aged "athlete" from exhaustion. The kids had no problems, which is not surprising.

There's always something new for the children at this annual day-of-the-year event, and this time the people who set up the affair out-did themselves. There were two new crowd pleasers. First, for the "small people," there was an exciting new ride, the Caterpillar. You could find it by zeroing in on the delighted squeals of the kids.

The Caterpillar action — which raced on a circular route at a speed of up to 50 miles per hour — had more than swiftness going for it. The real squeal-maker came after the first few go-arounds on the Caterpiller ride when, by surprise, a covering rose from the hub and put the riders in darkness. It was a stunner—and the kids loved it!

In fact, so many of the youngsters wanted to ride on the Caterpillar that there was a colossal traffic jam. "Next year," said Gus D'Errico, head of Employees Services, who again was in the role of host, "we'll have to figure out a way to keep the lines flowing in a more orderly way."

A similar thing might be said of the Octopus, that somewhat weird apparatus that has up, down, and side motion—while one or two riders are periodically spun about. As one woman put it, "Just looking at it after a full stomach persuaded me to go back to the seasaw." The kids had no thought of such reservations.

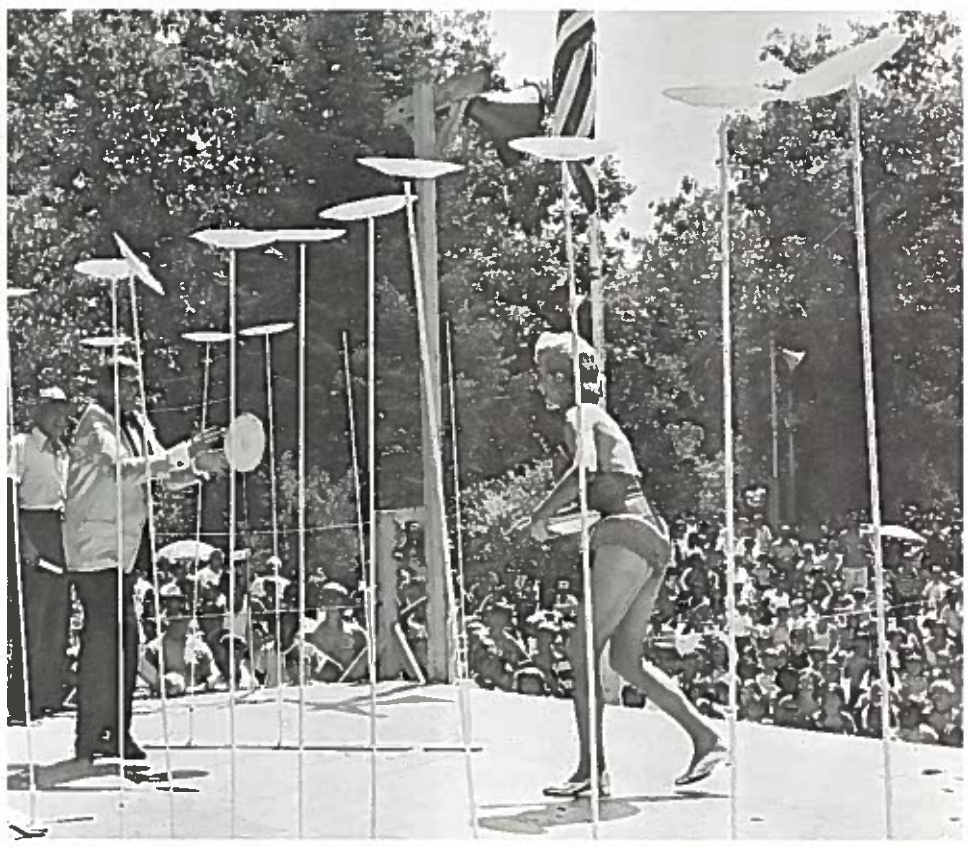
Plenty for everybody

Then, too, there were the traditional amusement events—the swings and the boat rides for the wee ones, the Ferris wheel, the merry-go-round, a small carousel, a fire engine, and two trains: the "Long Island Rail Road Train," used during the last New York World's Fair, and the Calverton Express, whose clanging bell at "railroad crossings" sounded (in volume) like the real thing.

And so it went at Totsville,

Of course, there were sporting events (some devised, one assumes, more for hilarity than sports). After the five-to-14-year-olds were running 30, 40, and 50-yard dashes, which seem to be legitimate sports events, the wild stuff started: 30-yard potato sack races, wheelbarrow races, three-legged races, shoe races, a fat man race, and so on. And there were the impromptu games, such as the long pick-up softball game on the east field and the afternoon horseshoe matches on the western section of the field—plus football-throwing that seemed to be in progress at many different spots throughout the day.

Basketball was in the spotlight, too. A brief "clinic" was conducted by some of the New York Nets. Present were



to gala day as 30,000 help make it a swingin' family affair

Nets Vice President Mike Manzer, assistant coach John Kresse, and two players, Ollie Taylor and Jimmy Ard. The response was fantastic! Never before in the history of the picnic have so many basketball buffs and prospective players gathered in such a tight knot to "hear the word" and see the classic moves. "They're great, great!" a young enthusiast kept saying. He had the agreement of the others . . . and there was a genuine note of sadness when the group had to leave to get to another appointment.

Happiness prevailed during the Children's Entertainment part of the show, which bounced along for more than an hour. Jugglers Mina and Albert, who worked with Indian clubs, got things rolling; then came a first, a marionette show by Martin and Florentz. A magician—or illusionist—named Kent Richards, and his two female assistants, baffled the crowd . . . pulling scarves and flowers "out of nowhere" and closing with a bit of legerdemain. The Virginians managed — miraculously — to keep 25 plates spinning atop 25 individual small poles. As a show closer that occasioned many gasps, Eric the Great walked up a guy wire, without using his hands, did a high-wire act (and even danced on the wire!), and then walked down the guy wire — again without using his hands. People who've seen children's entertainment acts at the picnic before remarked that this was the best show they'd ever seen.

Nor was that all. The boxing bouts—always a show-stopper—drew a large crowd. Especially entertaining were the small-fry bouts that featured wild swinging (with soft gloves) at opponents who knew no art of boxing; it didn't matter. John Koloski and his ever-vigilant crew of assistants were always on the spot making certain that nobody was injured. And of course, every "boxer" was a winner.

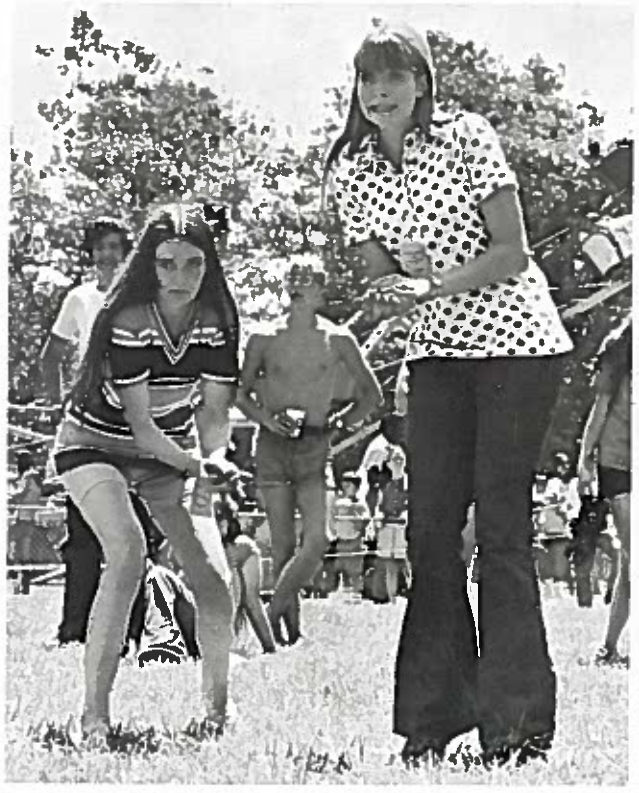
And the band played on . . .

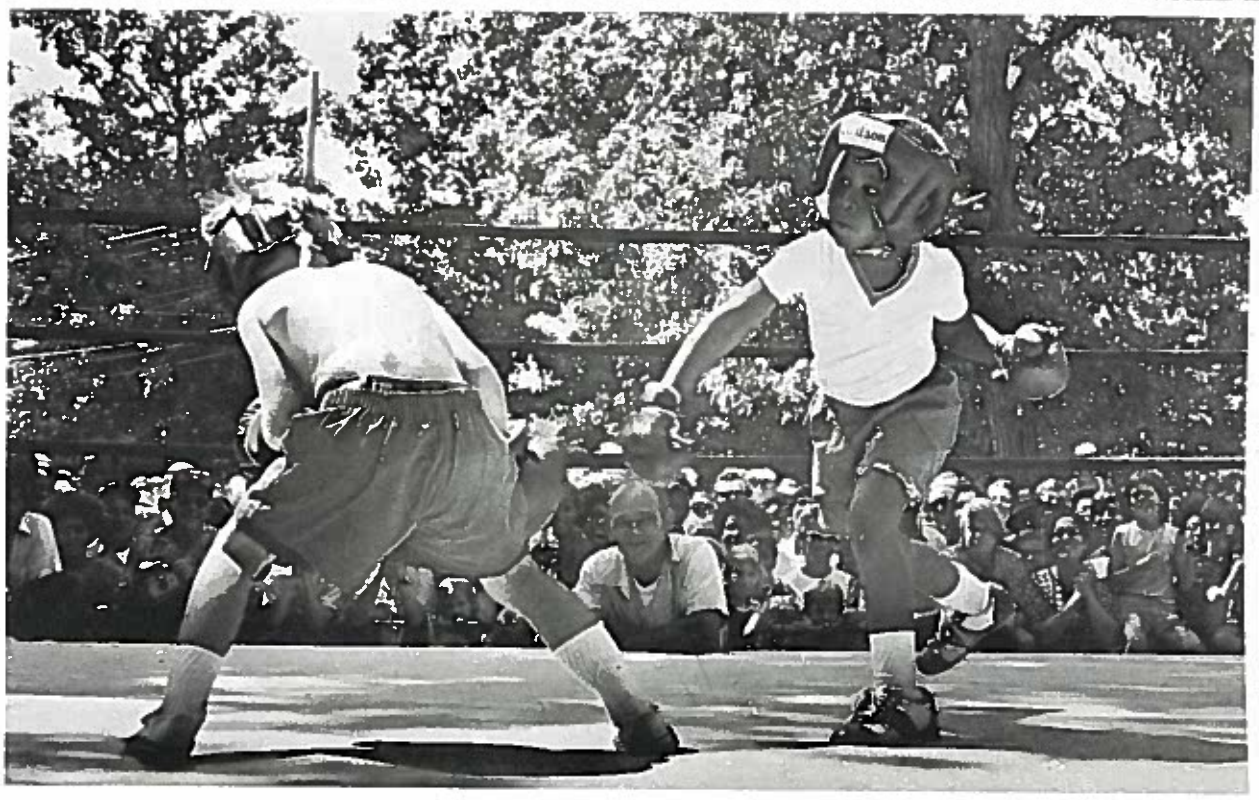
From beginning to end, with a minimum number of breaks, Al Kordula and his troupe of musicians were doing their thing — march music, polkas, a little swing, fox trots, and a lot of apparently enjoyable but unclassifiable "music" that the kids (up to about 50) get a kick out of. It was a varied performance.

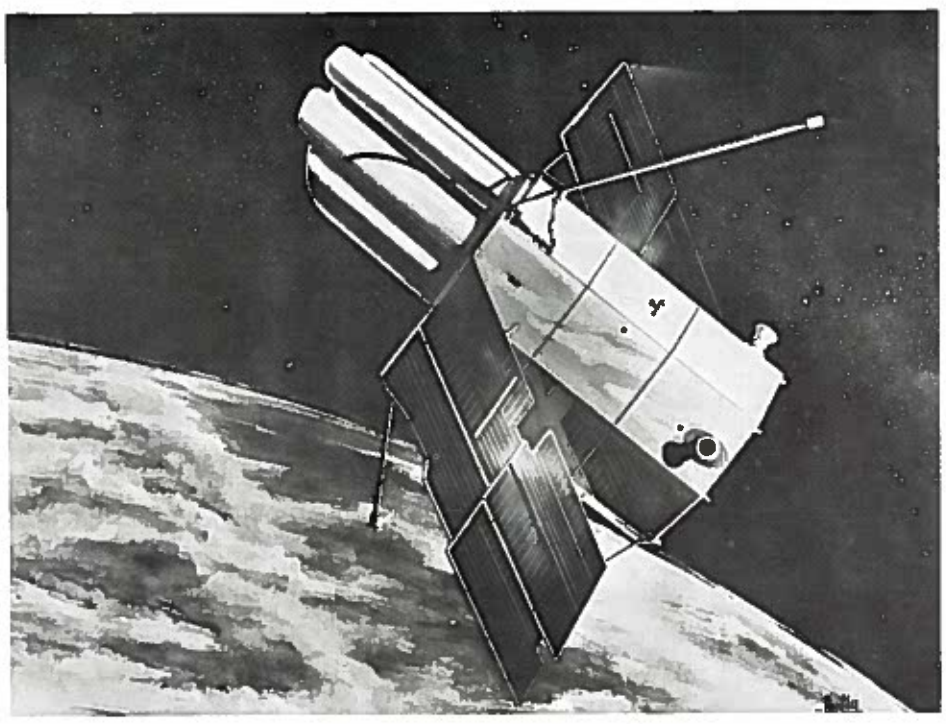
And let us never forget what to many (if not to most) could be called the reasons for being there: food, drink, activity . . . and rest. Hotdogs, beer, soda, milk were all there—for free. And as for rest, well, an unscientific survey revealed that for every woman dozing at the picnic there were 11 men sound asleep. That must mean something, but we'll be the last ones to say!

To put everything together—to arrange for and follow through on all the items that make a picnic run smoothly —D'Errico of ESO called on many talents: Facilities Maintenance (in various plants), the Garage (and its mechanics, fire and gas trucks), Medical, Plant Protection, Timekeeper, Payroll Department, and Presentations. If, by inadvertence, any group has been left out, Plane News extends its apologies.

Picnic photos by Dick Sander and Bob Settles







Next OAO. This is how Copernicus would look to an astronaut out in space. Bearing a 32-inch telescope for Princeton and smaller telescopes for University College of London experiments, it resembles predecessors except for two new sun baffles. (Art by Craig Kavafes)

OAO launch set for August 21; satellite dubbed 'Copernicus'

At 6:36 on the morning of August 21, the Grumman/NASA Orbiting Astronomical Observatory OAO-C is due to be launched from Kennedy Space Center. It will carry a 32-inch reflecting telescope to study interstellar space in ultraviolet light and some smaller telescopes to view X-ray sources. Weighing 4,900 pounds, the spacecraft will be the heaviest scientific payload ever launched by the United States.

Another first: a U.S. unmanned satellite will have a name. This OAO will be called Copernicus, honoring the famous Polish scientist: "We are pleased," said Polish Science Minister Dr. Jan Kaczmarek, "that the United States has chosen to inaugurate its participation in the Copernican Year in this way. It is a warm and friendly gesture."

A flight readiness review was conducted by NASA's Moseson Committee at Goddard Space Flight Center the end of June, and the final flight readiness review at the Cape is being held early in August. Because OAO-B had trouble with the shroud and was unable to achieve a satisfactory orbit, special attention is being given to the redesign of the shroud and the explosive bolts that release the shroud and expose the spacecraft.

Assuming a satisfactory launch with all systems "go," the observatory will be known as OAO-3 Copernicus, operating in a circular orbit 460 miles out in space. Its design lifetime is one year, but OAO Program Manager Ted Moorman says once it's circling the earth every 100 minutes, "there's nothing to keep it from staying up there for the next 100 years. Of course it could not operate that long, however, and we'd be delighted with a repeat of the OAO-2 life."

Still going strong

The extreme sophistication of OAO makes it susceptible to failure as well as to boundless success. OAO-1, launched April 8, 1966 stopped operating after only three days in orbit because of an electrical power failure. OAO-2, launched December 7, 1968, continues to function; it has obtained data on 3,000 star fields containing 25,000 stars, and has made more than 10,000 individual observations of about 1,500 different celestial objects. By this weekend it will have completed 19,000 orbits. OAO-B, launched November 30, 1970, failed to achieve orbit when the Centaur fairing malfunctioned. Fairing design changes have been made for the OAO-C (OAO-3 in orbit) mission.

Copernicus is to be investigating for Princeton University, carrying a 32-inch reflecting telescope to study interstellar space in ultraviolet light, and for the Universiy College of London, observing X-ray emissions from stars.

OBITUARIES

Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.

ZACKARY A. MOISAN of Static Test, Plant 31, died July 17 at the age of 45. He had been with Grumman 15 years, and he lived at 97 Convent Rd., Syosset.

VINCENT HOOSACK of Inventory Control, Plant 30, died July 19. He was 53 years old and had been with Grumman since 1949. He lived at 69 Twin Lawn, Hicksville.

STANLEY HENRY GULBIN died July 20. He was 52. He worked in Central Receiving, Plant 24, and had been with the Company since 1965. His home was at 135 Railroad Ave., Syosset.

First mission for Prowler

The Prowler is on the prowl!

In mid July, the Grumman-made EA-6B Prowler, an electronic countermeasures aircraft, flew its first combat mission in Vietnam. Under the direction of the commanding officer of VAQ-132, Cdr. E. Rollins Jr., a veteran of some 350 combat missions in Southeast Asia, the Prowler flew from the deck of the USS America in support of a strike force from the USS Saratoga. The three ECMOs with him were Lt. Cdr. "Robi" Robidoux, Lt. Bob Pinnell, and Lt. (j.g.) "Wen" Frost.

The crew reported that it was instrumental in denying enemy radar operators any useful information for their air defense systems.

A day later, Lt. Cdrs. Fred Wilmot and Bill Arnold of VAQ-132 made another flight — exactly 18 months after the first flight of the Prowler.

Commanders Wilmot and Arnold graduated from the U. S. Naval Test Pilot School in 1968 and were assigned to the Electronic Warfare and Reconnaisance (EW&R) branch of Weapons System Test Division of the Naval Air Test Center, Patuxent River, Md. At the time, Commander Arnold was project officer of the EA-6B monitor task; Commander Wilmot became the EW&R branch head. Both flew the first Navy systems test flight in 1970 and later conducted the Navy Preliminary Evaluation (NPE) of the Prowler. When the first operational squadron was set up, Commander Arnold became its operations officer, Commander Wilmot its maintenance officer.

Can you help?

The Nassau County Department of Social Services is actively recruiting homes for surrendered youngsters awaiting adoption. These youngsters are older children, many of them black, and many with severe medical handicaps. If you can find room in your home and in your heart for such a child, please call Social Services on 535-2200.

Naval Reserve has openings

The Naval Reserve Training Center at Freeport says it has openings for qualified men and women in such jobs as electronic or communication technicians, builders, steel workers, radiomen, plumbers, electricians, equipment operators, and mechanics.

Anyone under 42 without prior military experience—it could be higher for those with military service—may qualify. Enlistments are for four or six years. There are no active duty requirements, though there are weekly or monthly meetings and two weeks a year of duty.

If you're interested, you can get information at the Reserve Training Center, 112 Hanse Avenue, Freeport. Or call Master Chief Ratner or Chief Onuska at 378-2500.

Ex-Blue has new post

Norm Gandia, who performed solo for the Blue Angels a couple of years ago, has been named to coordinate Promotions and Activities, according to Tom Kane, director of Business Development. Norm is responsible for planning, scheduling and implementation of programs, promotional materials, and liaison with the military services for Business Development.

Piwowar, Warren, Schaller star as Tomcats show perfect record

Whether there really is meaning in a name may be left for psychologists, and others who enjoy such speculations, but there is a temptation to wonder a little. For instance, take the Tomcats and ask: would they be where they are now if they were called the Sleepy Cats, or the Blunderers? But they weren't so named and they're flying as high as their namesakes. Take a wee chunk of recent Bethpage Nite Owl softball history, say their fourth game; that was against Plant 3. Well, Gene Piwowar went four-for-four that night, Joe Warren two-for-four, Tom Schaller — the pitcher, yet! — two-for-two. In all, the Tomcats pounded out 16 hits as they humbled Plant 3 by 9 to 3 enroute to their fourth win without a loss.

Then the Tomcats confronted Plant 2, and Piwowar and Gary McGhee blasted triples, and both Jim Litterello and Gene D'Anria went three-for-three. This time the Tomcats had only 14 hits; and they rolled over Plant 2 by a 10-5 count. Next mission: give the boys of Plant 2 another chance. Litterello triples, Piwowar, Schaller, and Joe Warren double. Once again they slam 16 hits and win 10-6. So, six wins and no losses and you wonder. Maybe there is some power in a name.

Blowin' his own horn

Ed Gabriel (remember him?) came back to his characteristic self as he homered, doubled, and racked up four more RBIs in behalf of the Side Lobes during Wednesday day after-hours play. Duf Gallegro slammed a double, too, as Willys Warriors went down to defeat, 11-5. There's a little for coaches in the Side Lobes story, one for all to ponder: a fellow named Lou Coster, a guy who used to sit it out on the bench, was finally turned loose—and he enjoyed it! Six straight hits. How many other people do you know who are batting 1000?

In Wednesday night play, a guy named Frank O'Brian powered a double, triple, and homer on the way to a 13-12 win for the Hits over the Sloe Pokes. No pitcher's duel, this one, but lots of action. Think about the situation. It's the bottom of the seventh and the Sloe Pokes have a 12-11 lead as the Hits come to the plate. They get a man on, then boom boom — Ben Sgro doubles him in to tie the game and Paul McCann singles in the winning run. Sometimes you have to be patient; it was the 20th hit that nailed down the victory.

Tasty fare

There are some days when even patience is a useless companion, as in the tale of the Godsons and the Cheeseburgers. As the Cheeseburgers smoldered on the grille, the Godsons were stomping on them with four doubles and 10 singles. They burned the Cheeseburgers to a crisp with a 14-1 win. That lifted the Godsons to a 3-1 victory-loss mark. The Cheeseburgers? Well, 0-4 but trying.

Out at Plant 6, Ken Rogers, Ben Plawski, and Joe Pipczynski banged round-trippers in a scrap that gave What's Left a 10-7 triumph over the New Breed — who, three runs down — had hammered away. But with two men on base and the tying run at the plate, guess what happened. Yep, a game ending double play, Joe Pipps to Butch Kruse . . . The Vikings, powered by Jim Schwab's 5-for-5 including two circuit clouts and six RBIs, quacked open the Ducks, 14-9. The Vikings are 3-0; the Ducks are 0-3 . . . real down.

An era came to an abrupt end on the 18th. After two and a half years, the all-winning Simulation team stumbled, blowing one to the Mohawks, 5-2. In the "hitting stars" category, jot down Jim Schwab, 3 for 3 with one double; Richie Wasenius with two triples; Charlie Williams, 2 for 3 including a double.

Golf team leading in Industrial circuit; set final mixed Pinehurst for August 23

By edging Republic, 4½-3½, and dropping LILCO, 5½-2½, the Grumman varsity golf team ran its record to 6-1 in the L.I. Industrial league.

Jim Alverson toured the Bethpage State Park's Red course in 48, one over par for the 12-hole match, to pace the win over Republic. His partner, Steve Gray, finished with 50, and Tony Cisco and Jim Gambino both carded 53s.

The win over LILCO was doubly satisfying to the golf team: earlier, LILCO had handed Grumman its only loss so far this season.

In that match, Gray set a blistering pace, scoring 10 straight pars, added a birdie, and finished with another par to finish at 46, one under part for the 12-hole match. Alverson wasn't quite that hot: he closed at one over par. Cisco and Gambino had 53 and 55, respectively.

Abrami pin standout

Hank Abrami shattered the high game and high series marks in the Rainbow summer mixed league recently when he fired 220-636, thereby erasing his own 219 high and a 589 held by Nick Bilogan.

Earlier, Bilogan led the scoring with 203-586, Ned Kesin fired 585, and Tom Murtha and Al Massucci hit 546 and 206-544, respectively.

Last of season

The last mixed Pinehurst tourney of the season is scheduled for Wednesday, August 23, at Bethpage State Park. Entry fee: $5 per person, which includes greens fee ($4) and a contribution to the kickers prizes.

If you're interested and you have a partner, call Mike Cherry, Ext. 2133 or 2269, to sign up. If you don't have a partner, call Mike anyway; he might be able to supply a partner. Tee off time is between 4:30 and 5 p.m.

In the July 19 mixed Pinehurst, Eileen Toomey and Willie Suppa captured low-gross honors with 44.

And still champs. Vice President Tom Rozzi (2nd R) is still a top pistol shot, and so are three of his men from Security: Lt. Joe Oliveri, Al Berka, and Capt. Mike Suspenski. The Grumman team won its third straight tourney in national industrial .22 caliber competition recently. (Photo by Marie Trimborn)

Grumman unbeaten in net play

Grumman keeps rolling along in the L.I. Industrial tennis league. The latest readings show both the "Red" and "Blue" teams are undefeated in circuit play.

In recent encounters, Grumman defeated Pfizer, 2-1, as John Hsu and Jay Leng won their match, 6-1, 6-2; John Bohling and Dick Reade scored 6-0, 6-2; but Bill Wenzel and Val Kirillin lost a three-set match.

Earlier, Wenzel and Kirillin led a 3-0 sweep over Republic with a 6-4, 4-6, 8-6 victory as the Red team captured its eighth straight win.

In the Blues' seventh straight victory over Hazeltine, Gerry Fogel and Bob Bentler dropped a 4-6, 3-6 decision but Fred Bergmann and Dave McKendrick won 6-1, 6-0, and Lee North and Pete Shyprykevich also won, 6-4, 6-1.

Chairs session on lunar rocks

Mike D'Agostino, head of the Research Nuclear and Radiation Sciences group, was chairman of a special session on the analysis of lunar rocks by nuclear activation techniques at the recent American Nuclear Society annual conference in Las Vegas. NASA scientist-astronaut Dr. Joseph P. Allen and Dr. John H. Pomeroy, scientific administrator of NASA's Apollo Lunar Samples Research and Analysis Programs, were speakers. Some 2,000 attended the conference.

Dr. Allen, a NASA astronaut since 1967, was a member of the support crew for Apollo 15. Grumman expects to receive some of the lunar samples obtained on that mission.

Dr. Mike Stauber of the Grumman Nuclear and Astrophysics section also delivered a paper on "Gamma-Ray Background to HEAO Experiments from Spacecraft Radioactivity."

D'Agostino, who has served for three years on the ANS Subcommittee on Activation Analysis, was named chairman following the Nevada conference.

Owls' tee results

There have been some pretty good rounds in the Bethpage Nite Owl tee loop, with Jim Caponigro's 78 the low round. Other outstanding rounds were turned in by Tony Chettuck, 82; George Rocchio, 88; and Art Terry, 88. Caponigro, Rocchio, and Chettuck are leading in the total-point standings.

In O. E. & M. circuit play at Charter Oaks, Frank Heuther's 45, Fred Hetzel's 46, and John McKim's 48 led the scoring.

plane GRUMMAN news

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Wanted

HOUSE: 3-4 bdrm., mid. east Suffolk County, nd. mid-Aug. 234-1927.

EQUIP.: Bausch & Lomb slide trays and/or slide proj. 234-6402.

VOLVO: '68-'69, stick, 140 series, low mi., gd. cond. 292-1234, evgs.

FOLD. CHRS.: Fair cond., reason. AN 5-5899.

Car Pool

LIDO BCH.: Towne House apts. to Plt. 5, 8-4:30 p.m., or occas. ride. 431-8077.

BKLYN.: Belt Pkwy. to Plts. 1, 2, 3, & whse. areas, 7:30-4 p.m. 212 CL 3-8525.

For Rent

STUDIO RMS.: 2 indiv., furn., carpet, air cond., panel., refrig., hot pjlate, pvt. ent., share bath, ladies only, Aug. occup. WE 5-3129, after 6 p.m.

ROOM: E. Meadow, lrg. furn., pvt. ent. & bath, TV, refrig., nr. shop. ctr., avail. 7/29. 333-7849, after 4 p.m.

SKI CHALET: Vermont, nr. Mt. Snow, mod., 5 bdrm., nr. golf, lakes, horseback rid., & restaurants, summer & fall rental, wk. rates. 536-7679.

APT.: Centereach, 2½ rm., furn., pvt. ent. & bath, new, suit. 2. 732-8197.

APT.: Long Bch., ocean front, 3½ rm., terr., air cond., pool, wash/dry., sauna, tp. fl., $250/mo., Aug. 1 occup. 889-4490.

ROOM: Furn., nr. Grumman, new furn., pvt. bath. 796-8106, after 5 p.m.

Ride Wanted

PATCHOGUE: To Calverton. 289-1661.

ULANT 17: Next to Plt. 3 to W. Babylon, nr. A&S, 4 p.m. or earlier. 661-0197.

PLANT 35: To W. Babylon, beh. A&S, 4:30 p.m. Donna Carr, Ext. 3167.

For Sale

M.G.B.: 1969 sport convertible; am/fm; tonneau cov.; radials; 868-5391.

MIDGET: '62 MG, nds. bks., best offer. 747-6320.

SURFBD.: 8 ft. 6 in. Halk, 3 stringers, $40. 799-0003.

MISC.: 2 lb. cap. port. washer, auto. timer, $25; sz. 7-18 wed. gown, silk peau de soie, Alencon lace, $40; mod. ceil. lgt. fix., new, best offer. 694-5622.

WASH. MACH.: Hover port., spin dry, 1 yr., $80. 585-3747, after 5 p.m.

BOAT: '66 MFG, 14 ft. fbgl. skiff, 33 hp Twin-ski Evinrude, elec. start., Navy tp., lounge seats, 2, 6 gal. tanks, fully equip., '69 Holsclaw tilt trlr., Bulldog pack, rg. 12 in. whls., full viny wint. cov. 567-0323.

BKT. SEATS: 1 pr. blk. vinyl, $25. Martin Hoffman, Ext. 1131.

VW: '68, AM/FM, reg. serv. 888-1712, after 7 p.m.

STA. WAG.: '67 Chevrolet, pwr. steer., R&H, 9 pass., $895. JU 7-2873.

CHEVY: '62 conv., recent. trans. replace., $150. GE 7-3979.

STA. WAG.: '67 Rambler Rebel, new auto., pwr. steer., R&H, $675. HA 7-5969.

OPEL KADETT: '66 sport coupe, wh. w/red bkt. seats, 30 mpg, 60 hp, 4-spd. stick, 66,000 mi., nds. clutch & transmission work, recent. replaced start., gen. & water pump, $300. 277-1597.

STA. WAG.: '65 Ford Country Sed., $525. 724-4149.

FORD: '70 LTD, 4-dr. hdtp., 390, V-8, air cond., pwr. steer. & bks., vinyl roof & seats, new tires, 26,000 mi., 50,000 warr., $2,000. Pat Maiola, Ext. 3504.

RENAULT: '68 R-10, low mi., $675. 744-5544, after 6 p.m.

MUSTANG: '68, 6 cyl., 3-spd. fl., 2-dr. hdtp., R&H, poly tires. 586-3782.

PONTIAC: '69 Bonneville conv., pwr. steer. & bks., $2,100. 981-7279.

HONDA: '70 CL450, $775 or best offer. 785-4984.

BOAT: 12 ft., fbgl., '71, 6 hp Evinrude outbd., $350. 751-5540.

CATAMARAN: 18 ft. Unicorn, fbgl., trlr., make offer. 744-5544.

HOUSE: Westbury Hills, 3 bdrm. brick split, 2½ baths, 2 car gar., semi fin. bsmt., ¼ acre, lrg. liv. rm., din. rm., fam. rm., eat-in-kit., patio w/slid. drs., s-s, 3 air cond., o.h.w. $23,300 take o'mtge @ 6%, $42,500. 333-5223.

For Sale

HOUSE: Seaford, 2 bdrm. cape bungalow, unfin. attic, bsmt., w-w liv. rm. & foyer, lrg. front porch, gas fired hot water, cast iron burner, new roof, s-s, det. gar., 50x100, $525 approx. tax, sma. exist. mtge. 781-5945.

BIKE: 10-spd. French racer, new, all access., ask. $80. MO 9-8438.

WIND. FAN: 18 in. Hunter, 2-spd., elec. reverse, thermo. ctl., 25 in. hi., exp. to 40 in. wide, $15. 328-3523, evgs.

EQUIP.: Wide band oscilloscope TV color gen., Heath Mercury tube tester, EICO VTVM. 727-7831.

MINI BIKES: 2 Bonanza, 5 hp, $85/ea. AR 1-1149.

VW: '70 camper, fully equip., chem. hd., pop-up tp., radio, etc., $2,700. 277-4025.

MAZDA: '71 R100, Wankel coupe, 4-spd., full instru., radial tires, reclin. bkts., radio, pwr. ant., 12,000 mi., $2,500. Dave Rothschild, Ext. 1670.

VW: 65, 2-dr' sed., Beetle, new tires & muff. 883-9167, after 6 p.m.

PONTIAC: '69 LeMans, grn., 40,000 mi., 2-dr. vinyl sports coupe, 8 cyl., air cond., pwr. steer. & bks., auto., $1,700. 621-7165.

LINCOLN: '62 Continental, air cond., pwr. steer. & bks., & wind., low mi., $450. 665-9216.

For Sale

BICYCLE: 10-spd. Sears Sting-ray, Shimano gears, 24 in. whls., hand bks., banana seat, $40. 694-0417.

MINI-DOZER: 2 stick drive, 4 ft. plow blade, 3 ft. spreader, belt drive, 7 hp, $325. 543-2941, evgs.

HOUSE: Bethpage, 3 bdrm. ranch, 1½ bath, w-w, fin. bsmt. w/bar, patio, front & rear, 2 zone h.w. heat, att. gar., fenc. yd., appli., $35,000. WE 5-2997.

HOUSE: Dix Hills sch. dist. 5, cust. 3 bdrm., 2 bath, all alum. sid., eat-in-kit., panel. bsmt., rec. rm., wet bar, all appli., carpet, xtras, lndscpd. & treed, ask. $46,000. MO 7-8876.

BOAT: 20 ft. Raking Sharpie, 7 ft. beam, decks & cab., paint. & rdy. to go, $500. LT 9-3145.

MISC.: 12x12 ft. tent, umbrella, inside corner frame w/wo ctr. pole, storm flaps, canopy, Morsan, $50; Coleman 2 burner gas stove w/canv. case, $15. 798-5459.

AIR COND.: 5,000 BTU, Philco, wall or wind. mt., wood grain front, 115v, $75. 433-2668.

OPEL KADETT: '68, blue, 4-spd., 102 hp, $695. 427-2526.

PONTIAC: '68 LeMans, 350 CID, auto., pwr. steer., air cond., new Monroe 500 shocks, muff., tune up, poly tires, low mi., $1,250. AN 5-0658.

For Sale

TENT CAMPER: Nimrod Safari, zipper. scrns., storm curt., cust. add-a-rm., 6x9, 2 air matt., ground cloths, lines, spare tire, $400. 728-0994.

MISC.: Sears Kenmore deluxe wash., used 3 mo., $100; crib, matt., stroller, car seat, playpen, $40, will sell sep.; 16 in. RCA port TV, nds. tuner, $15. 826-6539.

MISC.: Wh. canopy Edison crib, matt., $30; Biltrite coach carr., k$25; GM 6.95x14 tire on rim, $13. 543-1565.

PIANO: Krakauer spinet, match. chr., $275. 627-6078 evgs.

WED. GOWN: Approx. sz. 7 or 9, nylon lace w/ sequins, train, hoop & hd. pc. 676-4440, after 6 p.m.

SHEEP DOG: Old English, AKC, reason. 212 356-6908.

VIOLIN: $250. TA 6-0338.

TRAINS: Lionel, steam & diesel eng., oper. & non-oper., cars, transformers. JU 4-6771.

MISC.: 12 ft. lg. orange, lined drapes, $20; 10, 20, 29 gal. fish tanks, equip., $30-$70. 931-6660.

MISC.: A/C, 7,000 BTU G.E., $25; 50 ft. split rail fence, $50; cust. 5 ft. formica stereo cab., $75; photo enlarger, dry., filt., trays & more, $45; 4x5 Spd. Graphic Woltensak, rangefind., lens, 1/1000 sec. focal plane shutter, $75. 864-6457.

POOL TABLE: 7 ft., 2 cues, rack. balls, $40. 799-4905.

PORT. FAN: New 20 in. 3-spd. on roll-about cart, $20. 731-4609.

GRASSCUTTER: Push type, used one season, not motor., $20. 589-2470.

MISC.: Accommodation & game tkts for ent. period of Summer Olympics, Munich, Germany, $180. 212 TY 2-6344.

PROPERTY: 85 mi. Disneyworld, Fla., Mackle Bros. Citrus Spg. community develop., ½ acre plus, in estate area, corner lot, $6,200; lot in same community, zoned for 2 fam. house, $6,000. 666-5057, after 6 p.m.

CAMERA: Elec. flash, Rollei, E27C auto., 3200 BCPS KII guide no. 63, AC/DC, Nicad batt. & charger, $50. HA 7-6913, evgs.

CAMERA: Mamyiaflex, 2¼x2¼ reflex, mod. C2, 80mm normal lens, 65mm wide angle lens, Poroflex find., pistol grip, flashgun, $125. 273-6213, after 6 p.m.

CAMERA: Petri full frame 35mm, comp. lgt. meter, case, new w/guar., $55. 735-9330, after 5 p.m.

PROJECTOR: 8 mm movie, 500 watt, 400 ft. cap. Keystone. 731-4609.

TV: 23 in. B&W Zenith, $75. 486-5772.

TV: 23 in. RCA, color cons., wal., contemp., new, $400. JU 1-2702.

CAMERA: 35 mm Petri, F2.8 lens, lea. case, $15. 893-0765.

HAM EQUIP.: Johnson Ranger I transmitter, Hallicrafters SX-111, recvr., key, mike, SWR meter, filt., more, ask. $150. PO 7-7344, after 6 p.m.

HI-FI COMPONENTS: Scott 22 watt mono. amp, type 99-D, Garrard changer mod. RC121/MK II, University spkr. 8 in. mod. 308, ask. $50. 221-2517, after 5 p.m.

AIR COND.: 5,000 BTU, G. E., used 1 season, $75; 6 cu. ft. refrig., avocado, used 1 yr., $75. 293-0534.

AIR COND.: 5,800 BTU, 7.5 amp., 115 volt, for side slide. wind., $300/2. 265-8018.

MISC.: 2 pool ladders for 4 ft. pool, new, alum, $10; used wood; port-o-crib, w/matt., $15; 16 ft. pol metal struct. only, $10. 681-9588.

MISC.: Umbrella rigs, $12/doz.; boat buoy, $15. JU 4-6090.

TOOLS: British Whitworth, 8 pc. open end & box wrench set, $10. 269-6568.

MISC.: 2 bowl. balls & bag, woman's 14 lb. & man's 16 lb; $12/ea.; accordion, ask. $115; 2, '71 VW whls. & orig. tires, used under 4,000 mi., $15/ea.; Sears hassock fan, 2-spd., $25; '65 Falcon rim w/snow tire. 234-1281.

PLYMOUTH: '69 GTX, 442, 11,000 mi. red/blk. vinyl tp., auto., pwr. steer., bkt. seats, ask. $1,900. 826-0879.

CHEVROLET: '63 SS, yel. w/blk. int., 4-spd., Hurst, sun, Amer. mags, 4 new tires, posi, 327, new chrome, $650. 473-1927.

T-BIRD: '65, 2-dr., pwr. steer., front disc bks., nds. work, ask. $325. 732-8482.

PINTO: '71, std., 2,000cc. snow tires, safety bump., big hub caps, $1,600. 286-9438, after 5 p.m.

CHEVY: '64 Impala, 6 cyl., auto., R&H, 68,000 mi., nds. bdy. work, $175. OV 1-3641, after 5 p.m.

BIKE: Fold., 26 in., spd-odo., cal. bks., $50. Manoogian, Ext. 2709.

at your SERVICE

This is a free service to Grumman personnel for non-commercial advertisements, accepted on a first-come, first-served basis. Classified advertisements are carried in PLANE NEWS only on the basis that everyone replying to such advertising will receive fair and equal consideration regardless of their race, creed, color, or national origin.
Type or print ad on form available at Employees Service and Engineering counters, and send via interplant mail to PLANE NEWS, Plant 5, Bethpage. List home phone (with area code if outside Nassau or Suffolk). Limit: one ad per person per issue. No item under $10, no firearms or ammunition.

CHEVROLET: '55, 8 cyl., 4-dr., 48,000 orig mi., $95. OV 1-7248.

BOAT: 16 ft. Glasspar. '66, 55 hp Evinrude, elec., tilt trl., Navy tp. & cov., 12 gal. tank, fully equip., $1,150. PE 1-3759.

HOUSE: Strathmore at Stony Brook, 4 bdrm. col., 2 car gar., 2½ bath, ctl. air, s-s, carpet, panel., circular drive, patio, all appli., lndscpd., $39,500. 751-3058.

HOUSE: W. Islip, 3 bdrm. ranch, lrg. country kit., w-w, in liv. rm., full bsmt., cement patio, s-s, new paint in & out, 75x200, wood., new refrig., wash. mach, immed. occup., $25,000 G.I. mtge., low tax. WE 1-3039.

HOUSE: Levittown, mod. cape, zone heat, 2 bath, w-w, ref, xtras. 796-9377.

HOUSE: Nassau Shores, Massapequa, waterfront, 2 bdrm. split, 2 bath, w-w, firepl., cath. ceil. liv. rm., all appli., $40,000. 799-8089, after 5 p.m.

MISC.: House, Miller Place, 4 bdrm. cape, 2 up/2 down, full bsmt., att. gar., s-s, eat-in-kit., bsbd. heat, lndscpd., wood. area, 100x100 corner; 2 Plymouth tire rims, $12.50 or trade for 2 Olds tire rims. 744-3365.

HOUSE: Bay Shore, 3 bdrm. ranch, 60x17, new heat. sys., hardwood fl., formal din. rm., eat-in-kit., panel. liv. rm., encl. patio, det. 1½ car gar., low taxes, $25,000. 212 763-6870.

FORD: '67, ½ ton, 4-whl. drive, snowplow, V-8, 4-spd., lock. hubs. 543-1767.

CAMP. TRLR.: '70 Nimrod Crown Riviera, fold-down hdtp., slps. 6, dinette, spare tire, $700. JU 1-6704.

STUD. SNOWS: 560/13 w/w, used 1 season, $20/pr. 938-5992, after 5 p.m.

TRLR. HITCH: For '68-'70 Tempest, $10. 543-3221, evgs.

CADILLAC: '61, 4-dr., new bks., $250. CA 1-5163, after 5 p.m.

DODGE: '71 Colt sta. wag., auto., 25 mpg, ask. $2,000. 724-5311, after 5 p.m.

TOYOTA: New landcruiser sta. wag., fact. air cond., 4-whl. drive, auto, front whl. hubs. 864-1445.

MOTORCYCLE: Bridgestone M II SS, 200cc, crash bar, lug. rack, turn sig., 2 helmets, new batt., low mi., $400. 298-4281.

MINIBIKE: Rup roadster, used 8 hrs., front & rear bks., shocks & lgts., 4 hp, 12 in. dia. whls., helmet, $250. WE 8-2594.

TIRES: 2 Snows, Chevy rims, 7.35x14 (7.00x14, 4 ply nylon, $25. WE 1-6517.

COMET: '66 blue sta. wag., 6 cyl., $450. 588-3951.

CADILLAC: '69, air cond., full pwr., stereo AM/FM, low mi., blk.-wh. lea. int., $3,695. 884-7780.

PROPERTY: Cooperstown, Cobleskill area, col. house, barns, nd. repair, sma. pond, 15 acres, pvt, but access, $18,500, more land avail. 273-0627.

FAN: 20 in. G.E. port., 3-spd., thermo. & elec. reverse., $20; Biltrite coachette, silver gray, $20. 265.3370.

MOBILE HOME: Bay Shore, 63 ft. Vindale, 2 bdrm., 1½ bath, 12x18 exp. liv. rm., ctl., air cond., scrn. & carpet. porch, patio, furn., wash./dry. 666-8760.

FORD: '66 Galaxie conv., AM/FM, R&H, full pwr., $300. 587-6784, evgs.

CADILLAC: '65 conv., blue, full pwr., air cond., $900; '62 Corvair, $25, or free w/Cad. 589-8747.

CORVETTE: '59, 427 c.i., manual-shift auto., will trade or bk. up for maj. compon. 269-9188.

MGB: '66, AM/FM, heat., wire whls., tonneau, boot, new tires, xtras, $550. 941-4170.

MUSTANG: '66 Shelby, auto., Cobra eng., new paint, blk. w/blk. int., $1,300. 378-5612.

BUICK: '65 LeSabre 400, 4-dr. sed., new pwr. bks., pwr. steer., auto., new tires, $495. Fred Schlichtmann, Ext. 87157.

STA. WAG.: '65 Chevy, V-8, auto., R&H, 6 pass., $400. 265-0479.

MISC.: '66 VW, nds. eng. work; '67 Opel sta. wag., no eng. 269-9188.

MOTORCYCLE: '71 BSA, 250cc, 2,400 mi., helmet & hvy. dty. chain, $435. 567-0570, after 7.

MOTORCYCLE: '70 Triumph Tiger, 650cc, xtras, $1,175. 526-2506.

TRAIL BIKE: Boonie, new 7 hp eng., clutch & jack shaft, $150. WE 1-3076.

BSA: '69, 441cc, Victor, Spec., lgt. wgt. ins., 5,000 mi., $550. 795-5809.

MOTORCYCLES: '66 Harley Davidson, full dress comp. reblt., $1,550; '71 Harley Davidson FX Superglide, 3,000 mi., $1,850. 226-5256.

MOTORCYCLE: '69 Kawasaki Avenger, 350cc, lug. rack, shop manual, 6,000 mi., $550. 744-3356, after 5 p.m.

DODGE: '66 Dart, 4-dr., auto., xtra whls., snows, 39,000 mi., $800. VI 9-3605.

CAMPER: 11 ft. Concord, slps. 4, self contained. 334-8490, evgs.

FURN.: 7 pc. mahog. bdrm. suite, dbl. bd., matt., box spg., dbl. dress., $225. 747-7159.

Mockups aid design engineers to form shape of things to come

On the shop floor of Plant 5 there's an area roughly half the size of a tennis court, and it's there that many Company products literally take shape. There, in the Design Aid Lab, the ideas and drawings of the engineers are transformed into three-dimensional objects that serve as the first models of what, with later modifications, will become prototypes.

The task of the Design Aid Lab is to make a mockup, that is, a model—usually in full size—that is truly representative of a design concept; it is formed to show the spatial relationships involved in the design. The designer, instead of having just a mental picture of his idea, can now have "the thing in itself."

"Of course, the mockup duplicates only the appearance of the object," says John Arlin, who heads Grumman's mockup area. "The first—or 'soft' mockup—is deliberately incomplete. For example, it's not made of the materials that will be used in the product; nor does it include the operational systems to be used in the end product; nor is the weight of the product simulated.

"The materials used in the 'soft' mockup," says Arlin, "are such things as corrugated cardboard, honeycomb, Fome-Cor, styrofoam, and wood. The 'hard' mockups—which are made up much later in the game, when the design is largely fixed—are made of wood and metal and are finely detailed. The designers usually take part in fabricating both types of mockups, guaranteeing the basic design integrity. But in all cases, we use the lightest and least expensive substitute materials that will satisfy structural integrity of the mockup."

Mockups have pluses

According to Bill Kopack, manager of the Design Aid Lab, a lot of advantages are inherent in a good mockup. He says that probably the "greatest advantage is that the mockup is three-dimensional, requiring no interpretation—thus avoiding misunderstanding. Because the designer now sees what he's created, he can make adjustments. Take an aircraft or Space Shuttle mockup as an example: the mockup shows size relationships and those relationships sometimes surprise a designer. In a recent case, an area was designated for equipment installation, and, on paper, everything looked good; but when a man got into the area and stooped down to remove a piece of equipment from a lower shelf, there was a problem; because the engineer could view the mockup, a potential problem was spotted, and that specific section had to be reconfigured."

That is a real plus, the type of thing that makes a mockup invaluable: you can spot problems long before you make a hardware commitment, thereby avoiding costly manhours and materials for redesign and remake.

Design aid, too

Then, too, the mockup is the ideal, almost real-life stage on which to perform evaluations of such crucial matters as human engineering, fit and function, maintainability and accessibility, ingress and egress, and so on.

"I don't want to leave the impression that the Design Aid Lab is a self-sufficient area performing miracles all by itself, without reference to other parts of the Company," Arlin explains. "Engineering is obviously the initiator, but we have to tie in closely with Jim Rauscher's Wood Shop, John Dukarm's Sheet Metal shop, John McNamara's crew in Facilities Maintenance, and a lot of others."

Those form the basic team, the core around which projects and programs revolve. And they are the people who set up and define the "challenges" for the Design Aid Lab—the Lunar Module, the Gulfstream II cockpit and equipment racks, the EA-6A and EA-6B, the S-2E value improvement cockpit, the Gulfstream/A-6A (forerunner of the TC-4C), the wheelhouse of the Patrol Gunship Hydrofoil (PGH) Flagstaff, the VSX cockpit and crew station and, later, the VFX cockpit and crew station that in still later design became the F-14.

"Through mockups, all these were the 'agents' of cost-saving design modifications. They also served to instill design confidence in the minds of our customers," remarks Arlin. "And as technology expands and products become increasingly complex, the need for mockups grows proportionately."

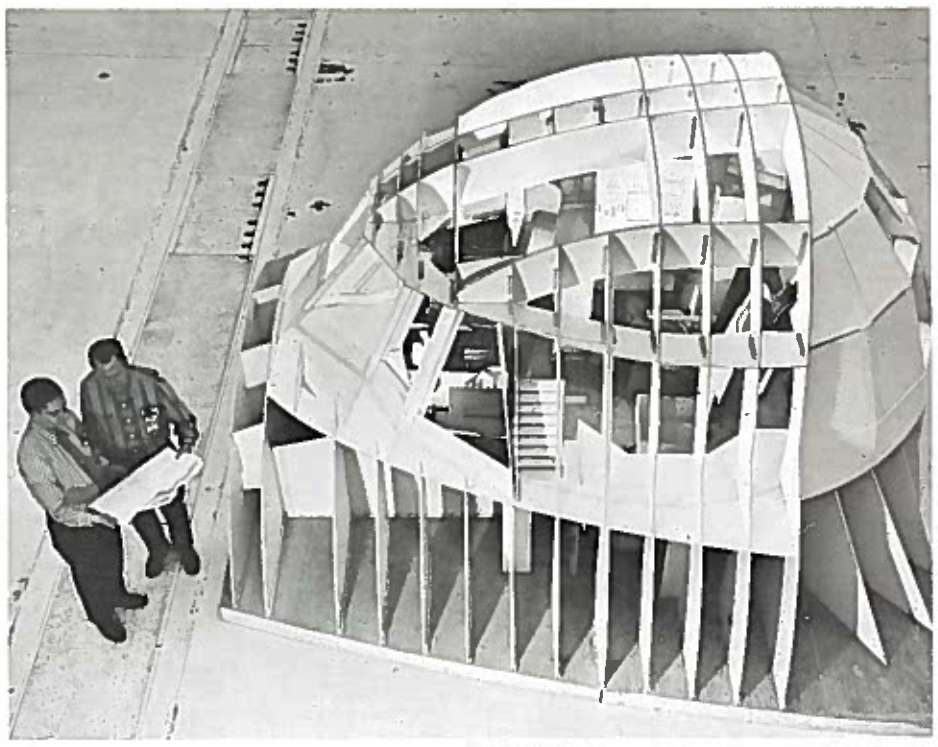
Honor for Kleinhans

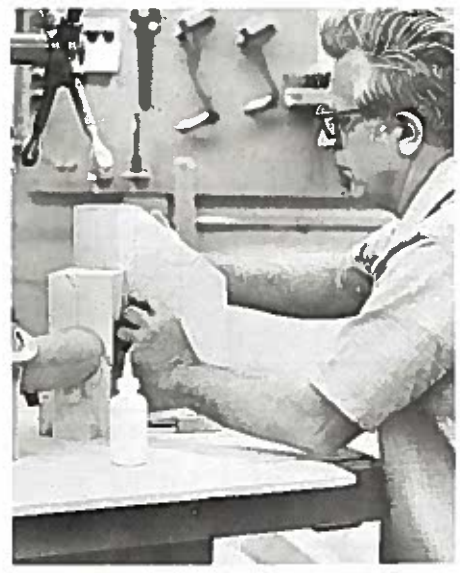
Bob Kleinhans

At its International Conference in Atlanta recently, the Society of Aeronautical Weight Engineers honored Bob Kleinhans by naming him a Fellow. Kleinhans was formerly with Republic, where he was chief weight engineer in Research & Development. Since 1965 he has been with Grumman in Weight & Mass Properties Control. He has been active in the Society since 1941.

"Fellows are those members who have achieved distinction in mass properties engineering and/or who have materially contributed to the advancement of the Society," said his letter of notificaion. Among his contributions to S.A.W.E. are his chairmanship of the Organization Committee, formed to improve the total organization and recommend changes to the Society. He has held most of the offices in the Long Island chapter, including the presidency.

Kleinhans holds a BS and a Master's from New York University.





Taking shape. **The first three-dimensional view of a new product is seen in a wooden mockup. Bill Kopack and Jim Rauscher (top) follow progress of the flight deck of the Space Shuttle Orbiter as Eddy Nikodem of the Wood Shop (right) fashions a section of the F-14. Below, an early mockup of the F-14 is being built. These structures not only help to define the product; they often point out potential design and manufacturing problems early in the game—saving cost and time. (Photos by Fred Annette (top) and (right) Jim Wagner)**